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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,511	02/16/2005	Sang-Soo Kwak	WON-0003	9215

7590 05/23/2006

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EXAMINER

MARTIN, PAUL C

ART UNIT	PAPER NUMBER
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1655

DATE MAILED: 05/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/519,511

Applicant(s)

KWAK ET AL.

Examiner

Paul C. Martin

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The Amendment filed 04/04/06 have been received and entered.

Claims 1-3 and 7-9 are pending in this application.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

All objections and rejections not repeated in the instant Action have been withdrawn due to Applicant's response to the previous Action.

New Rejections

Claim Objections

Claim 7 is objected to because of the following informalities: The word "chloride" appears to be misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 103

Claims 1-3 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Byth *et al.* (2000) in view of Ichinose *et al.* (1995).

Byth teaches a high-throughput method for screening for a modulation in plant cell growth after exposure to extracts of culture solutions containing the virulent bacterium, *R. solanacearum* by culturing tomato cells in multi-well plates to which the bacterium is added, removing the solutions from the microwell plate and adding 2,3,5-triphenyltetrazolium chloride (TTC) for 3 hours, removing the solutions and adding contacted with 95% ethanol for 16 hours at room temperature, and measuring the optical density at 492nm in a micro-plate reader (Pg. 342, Column 1, Lines 4-14 and 20-28).

Byth does not teach the use of photomixotrophic cells, *Marchantia polymorpha* or *Nicotiana tabacum*, treating with TTC for 4.5-5.5 hours, measuring the optical density at 490nm, and ethanol for 1 hour at 60 degrees C.

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Ichinose teaches a high throughput screening method for the screening of synthetic herbicides by culturing photomixotrophic *Nicotiana tabacum* cells to which herbicides are added, transferring the reaction mixture to a microwell plate and measuring the fluorescence with a high-throughput plate reader (Pg. 695, Column 1, Lines 33-34 and Column 2, Lines 1-21 and Pg. 696, Table 1).

It would have been obvious to one of skill in the art at the time of the invention that the adjustment of the TTC incubation period from 3 hours to 4.5-5.5 hours and measuring the optical density at 490 instead of 492nm would have been well within reason as a means of optimizing the procedure for the best possible results. Similarly, one of ordinary skill in the art would have known that ethanol extraction procedure could have been done more rapidly if heated ethanol were used. It being well known in the art that heating will speed up the organic extraction process.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method for screening cell growth in response to micro-organism infection using plant cell cultures as taught by Byth with the high-throughput method for the screening of synthetic herbicides by culturing photomixotrophic *Nicotiana tabacum* cells because the use of photomixotrophic *N. tabacum* cells would provide insight into whether plant growth modulation resulted from either or both of two pathways.

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It was known in the art at the time of the invention, that photomixotrophic cells depend on both photosynthesis and catabolism of sugars in the cellular medium for growth. The ordinary artisan would have been motivated to combine the two methods in order to more accurately and directly assess the effects of compounds on the growth of photomixotrophic cells by effecting either or both of photosynthesis or sugar catabolism. There would have been a reasonable expectation of success because both high-throughput methods are directed toward the characterization of the effects of plant growth regulators on plant cell cultures.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole is *prima facie* obvious to one with ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Response to Arguments

Applicants arguments concerning the art rejection set forth in the previous Office Action are deemed moot in view of the above new art rejections.

No Claims are allowed.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul C. Martin whose telephone number is 571-272-3348. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terry McKelvey can be reached on 571-272-0775. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Paul Martin
Examiner
Art Unit 1655

05/11/06


TERRY MCKELVEY, PH.D.
SUPERVISORY PATENT EXAMINER